

RESEARCH ARTICLE

Purchase and Price Optimization of Vertical Mobile AC

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ABSTRACT

Heat has always been a problem in countries like India, Pakistan and Sri Lanka. As these countries are located near the equator region, the sun's light falls directly on them, thereby keeping their temperature high. And India, being a country having a tropical climate, experiences immense heat with little difference in temperatures between summer and winter due to its proximity to the equator. It is hot and humid all year round, with an average temperature of 27°C. A proper air conditioner would be a good appliance to have during these times. When doing work or event, the place could become massy and uncomfortable for technicians or engineers. This work finds itself worthy in recognizing the functionalities of the purchasing department. ABC analysis was employed in reducing the cost of the portable vertical AC. This paper includes a short description of procurement, supply chain management, just-in-time, bills of materials and vendor rating. In manufacturing the air-conditioning system by doing these, we can find the best possible supplier of individual components at minimum cost so that we can reduce the final cost of the assembling.

Keywords: Air conditioner, Price optimization, Supply chain management, ABC analysis, Bills of materials, Vendor rating.

1. INTRODUCTION

Air conditioning is referred to as a functionality that regulates temperature. It also maintains a clean circulation of fresh air, thereby controlling instantaneous moisture. Air conditioning used for cooling and heating is based on sessions to maintain human comfort and needs.

For any organization, the role of purchasing is very significant to compete in the marketing scenario; and, it has been in stages of constant development in the recent years. Conventionally, they are regarded as a supportive function and have a profound influence on the bottom-line of the company. Cost-reduction and savings were the main performance indicators. In terms of economy and intangibility, organizations identify the significance

of value addition generated during the purchasing processes. In addition, they broaden their purchasing vision. With reference to the purchasing department, which is one of the major intangible value contributions of any organization, it is provided to its internal customers; and, they are measured by two parameters:

1. The level of customer satisfaction; and,
2. The internal service quality.

A good internal customer relationship management can provide certain advantages viz., improving the organization's strategic position, benefits and business performance. This research study was carried on to realize that the procuring section of an organization can develop value within the organization and the value can be evaluated and

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enhanced. All these are to be done having a thorough concentration on the clients who are internally present in the department.

1.1. Procurement

All the mass production industries involve functionalities like purchasing and procurement interchangeably; however, in spite of their similar nature the implications which they convey are rather different.

Procurement comprises the functionalities like vendor selection, establishment of payment terms, strategic inspection, contract co-operation and procuring goods in a genuine way. Procurement is fundamentally the principal term inside which purchasing is present. Procurement process involves purchasing all the goods, services and work that is necessary for an organization.

1.2. Supply Chain Management (SCM)

A supply chain is a structure comprising of organizations, individuals, actions, data and assets required in moving an item or service from the provider to the client. The functionalities that occur in supply chain paves way for the development of end-products that are to be conveyed to the end-client. Supply chain is a strategy of planning and managing the activities that occur over organizational limits with the objective of co-ordinating supply and demand in a financially savvy manner.

1.3. Just-In-Time (JIT)

Wiping out all stock and Work-In-Process (WIP) is outlandish in a positive sense. The path to assembling proficiency is ceaselessly diminishing the amount of each one in the framework.

There is a common propensity to respond to issues by collecting stock reserves depending on evaluation of quality blemishes, failure in the equipment and absence of team member. Toyota, none the less, is against utilizing collection of stock to combat these issues. Having abundance of stock indicates that the different production issues are covered up or overlooked. This creates a complex sensation in building up a work site with a firm establishment.

The Just-in-Time (JIT) logic supports creating and additionally conveys just the important parts inside the vital time in the vital amount utilizing the basic fundamental resources.

The proper quantity of parts are created and instantly delivered when the client's order is received. Upstream procedures and providers convey precisely the proper amount of segments when the downstream procedure requires them. Such a circumstance needs no requirement for stock.

As per the production plan is concerned, the parts generated by one process in a pull system (a conventional production system), are given to the subsequent processes regardless of the situation. This strategy might be great when parts can be delivered as planned, all through the whole procedure. Yet, it faces complications in situations that arise when only one process experiences difficulty and the line stops, the procedures are specifically identified with the agitated one experiencing either a deficiency or a reinforcement of parts. This is coined as a "push" system.

1.4. ABC analysis

According to ABC Analysis 15-20% of items consume 70% of resources and it is denoted as A. About 20% of items consume 20% of resources and it is denoted by B. About 65% of items consume 10% of resources and it is denoted by C. By controlling the cost of A-items we can reduce the total cost of the product. We followed the ABC Analysis to decrease the cost of the portable vertical AC.

1.5. Bills of Materials (BOM)

Bills of Materials (BOM) file in the computer system shows all the materials, parts and sub-assemblies and their quantities required to produce each end product. It shows the relationship of various parts, subassemblies etc. with the final product, i.e., it shows how different parts, components, subassemblies are joined to form the end product. It thus shows the product structure or the manufacturing sequence of the end product. This enables the planners to readily identify the components, which must be available to make subassemblies prior to assembly of the end product.

1.6. Vendor rating

Many organizations prefer vendors who would produce defect-free services and products and enable a timely delivery (very close to the reasonable time). A variety of vehicle types helps in determining the supplying firms that enable a closer satisfactory performance, thereby identifying which

current suppliers should be retained. Vendor rating corresponds to one such vehicle.

For achieving the vendor ratings, some kind of review processes must be carried out. The initial process is the vendor identification that can both supply the required service or product and provide a strategic match for the buying firm. The significant parameters to be used as criteria are found for the purpose of vendor evaluation. By means of decreased cost or increased service, the variables add value to the process. On determination of the critical factors, the devised technique helps the vendor to rate or judge on each individual factor.

Numeric rating is a possibility. Based on the significance, individual ratings can be weighed. Finally pooling can be done to arrive at an overall vendor rating. Complexity of the process and many parameters can be conflicting or complementary. It further adds to the complexity that some factors are subjectively measured, and the others, quantitatively.

On establishment, supplying firm can be exposed to the existing system. This is done by means of a formal education process. Once the buying firm is assured about the vendor and the understanding of its ability and participation willingness, the process of evaluation can be started. It could be an on-going process or can take place within a quarterly time frame. The rating must be reported to the participating vendor with some firms, which actually publishes the overall vendor standings. The vendor should formally take up an action plan which is expected to tackle the associated problems. In predetermined critical areas, most of the buying firms require that the vendors show continuing improvement.

Sellers or providers are provided with status or title as indicated by their fulfilment of some level of execution; for example: delivery, lead time, quality, cost or selected blend of factors. The inspiration for the foundation of such a rating framework is a part of the exertion of manufacturers and service firms to guarantee that the coveted qualities of a bought item or service is implicit and it is not decided later by certain after-the-fact indicator. The vendor rating may appear as a various levelled positioning from poor to brilliant and whatever rankings the firm embeds in the middle of the two. For a few firms, this rating may appear to be as some kind of award framework or as some variety of certifications. Quite a bit of this

consideration regarding vendor rating is an immediate consequence of the broad usage of the JIT notion in the US and its emphasis on the basic part of the purchaser-provider relationship [1-6].

2. METHODOLOGY

2.1. ABC analysis

The items which are consuming 70% of resources are,

1. Condenser
2. Evaporator
3. Compressor
4. Motor
5. Remote Control Device

If we decrease the price of A-items we will be able to decrease the total cost of the product easily. The components of vertical mobile AC are classified into 3 categories by using ABC ANALYSIS. The ABC analysis is shown in Figure 1.

2.2. Bills of materials

Bills of materials are regularly alluded to as “recipes” or “shopping lists.” They specify each raw material required, and also the amount, which marks the acquirement of materials a considerably more straightforward errand. These can likewise be scaled up or scaled down relying on the financial plans.

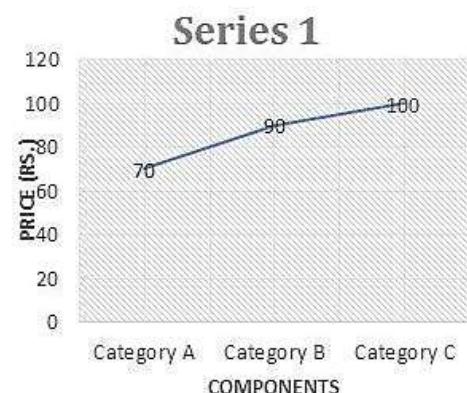


Figure 1.ABC Analysis

With improved planning, more precise information on the time required to complete the task can be computed. This permits the sales team to budget jobs and orders more successfully thereby turning the organization to become more beneficial. This makes it a merit in encompassing a portion of the sales group in the BOM creation, bonding all the

departments. Essentially in the idea of its creation, a BOM ensures that all the departments are functioning with coordination, like a single department. When we make an exact BOM, we require a contribution from plan, acquisition, manufacture and deals to ensure the report is 100 per cent precise.

With a clear list of materials, amounts and inventories, it becomes a must to possess the capacity to oversee that the materials are not out of stock again. BOM enables to set updates when the stock is running low ensuring better arrangements in plan.

With a complete list of the expected features to finish a project, the organizers should have all the information they require to outline the extent of the project and the number of individuals that should be included in it.

It is not advisable to run out of materials again; it is required to get a custom-made shopping list.

3. CONCLUSION

In this project, the price of the purchased components for the manufacturing of mobile vertical AC from different vendors gets optimized from 17,000 to 14,000 by analysing the vendors based on the cost, quality and delivery and the other non-added activity charges. ABC analysis has been applied for the selection of the cost effective components. Vendor rating was also carried out. Future reduction is possible as volumes of production increase.

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